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# UNITED NATIONS TRANSPORT AND COMMUNICATIONS DECADE IN AFRICA, 1978 – 1988

## REPORT ON A REGIONAL SURVEY OF MANPOWER AND TRAINING NEEDS IN TRANSPORT

**Part I General and Multimodal Transport**

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# REGIONAL SURVEY ON MANPOWER AND TRAINING NEEDS IN GENERAL AND MULTIMODAL TRANSPORT

REPORT

TABLE OF CONTENTS


| | Paragraphs |
|---|---|
| I. INTRODUCTION | |
| 1.1 Background | 1 - 9 |
| 1.2 Content of the survey | 10 |
| 1.3 The terms of reference | 11 - 14 |
| 1.4 Organization and programme of work | 15 |
| II. Summary of Findings Recommendations | |
| 2.1 General | 16 - 18 |
| 2.2 Manpower policy, planning and utilization | 19 - 23 |
| 2.3 Training needs | 24 - 32 |
| 2.4 Training Curricula | 33 - 34 |
| III The present manpower situation | |
| 3.1 The general education and manpower situation in Africa | 35 - 39 |
| 3.2 Fields where manpower and training needs are critical in general and multimodal transport | 40 |
| (i) Transport policy, planning and co-ordination | 41 |
| (ii) Transport projects appraisal | 42 |
| (iii) Transport projcts analysis, evaluation, and management | 43 |
| (iv) The legal aspects of transport | 44 |
| (v) Transport statistics | 45 - 46 |
| 3.2 Factors contributing to manpower shortages in general and multimodal transport | 47 |
| (i) Inadequate emphasis given to technical education by African countries | 48 - 51 |
| (ii) The brain drain | 52 - 53 |
| (iii) Inadequacy of institutional arrangements for manpower development in the transport sector | 54 - 55 |
| IV. Country by country estimates for manpower and training needs in general and multimodal transport | |
| 4.1 Estimated present manpower needs | 56 - 58 |
| 4.2 Training needs | 59 |

| | Paragraphs |
|---|---|
| V. Types of Transport Training institutions available in the region | 60 |
| 5.1 National training institutions | 61 |
| 5.2 Subregional training institutions | 62 - 64 |
| 5.3 Overseas institutions | 65 - 67 |
| 5.4 Training offered by international and intergovernmental organizations | 68 - 70 |
| 5.5 Training methods and techniques suitable for senior and middle technical and administrative staff in the transport sector | 71 - 74 |
| VI. The proposed strategy and content of training in General and multimodal transport | 75 |
| 6.1 Problems of training needs identification and determination | 76 - 77 |
| 6.2 Strategy for designing curriculum for training in general and multimodal transport | 78 - 82 |
| 6.3 Fields of training areas for professional, senior and middle administrative staff | 83 - 84 |

VII. ANNEXES

Annex I The terms of reference

Annex II Explanation of the mathematical model used for estimating manpower needs

Annex III Samples of ESAMI transport courses held in 1984 and 1985

Annex IV Existing methodologies suitable for training in general and multimodal transport

Annex V List of countries visited and persons met during field missions

Annex VI List of acronyms

Annex VII List of references

# I. INTRODUCTION

## 1.1 Background

1. Successful implementation of policies, plans in any type of activity depends ultimately on those responsible for them. If, therefore, economic and social progress is being limited by shortages of well-trained and experienced manpower - as is the case in many parts of Africa, investment in developing human capital offers prospects for two important benefits. One is high economic and social returns through sounder policy, investment, and operational decisions. The other is to break out from environments of inappropriate practices which inhibit entrepreneural initiative as well as erosion of responsibility and self-reliance at all levels.

2. In many African countries attention has so far been focused on the design and installation of transport systems and projects. Of equal importance is the quality of human resources available at all levels of transport development and operations. The Economic Commission for Africa (ECA) recently commented, for example, that in Africa:

> "too many State-owned transport agencies and enterprises run more like out-moded public administrations than as efficient, cost-conscious service agencies for the public. Thus policy reforms and institutional changes are needed in many countries:-
>
> - "to clarify and tighten the responsibllities of State-owned transport enterprises;
>
> - to enhance management's freedom of action for fulfilling these responsibilities and running their affairs efficiently....., and
>
> - to open up the transport sector to new initiatives and enterprise arrangements" 1/

A number of African governments have expressed dissatisfaction with the financial deficits, poor productivity and service quality of transport parastatals.

3. Lack of trained manpower in the transport sector has been stressed in a number of recent documents. The U.N. Department of International Economic and Social Affairs (DIESA), for example, recently noted that:

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1/ Document DEC/TRANSCOM/CM/IV/4(T) submitted to the Fourth Conference of African Ministers of Transport and Communications, Conakry, Guinea Feb. 1984, ECA p.8.

> "to improve the efficiency of transport systems and services in developing countries, the countries themselves and international organizations and developed nations which assist them in transport sector will need to give greater priority to manpower development during the coming years"2/

It is further observed that:

> "most developing countries lack the facilities and instructors to train their transport personnel and must send these personnel to institutions far away in developed countries. This is a very costly practice which does not permit the countries to train sufficient personnel. Moreover, the training programs provided overseas do not always suit the geographical environment and other conditions of developing countries".

4. The DIESA authors concluded that if account is taken of financial scarcity and the need to make use of local human resources, then:

> "the transport needs of many developing countries would be better served if the training of their personnel were organised on a regional or sub-regional basis .... and for highly qualified training such as that of .... transport economists and administrators ....multinational training institutes (should) be set up .... to meet specific requirements of the countries in a region or sub-region. Such institutes which should have sufficient budgetary provisions for carrying out their programme of activities and with the necessary research facilities would offer many advantages, including:
>
> - reduced training costs, thereby making it possible to extend training to larger numbers of personnel;
> - training programs adopted to the spectrum of local conditions ..... thereby leading to more efficient personnel;
> - task oriented courses aimed at teaching specific skills;
> - refresher seminars and in-service courses to keep staff abreast of developments in the transport sector;
> - research programmes, particularly for the adaptation of modern transport technologies to the regional environment; and

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2/ Main issues in Transport For Developing Countries 1981-1990 U.N.ST/ESA/17 U.N. New York, 1982, Dept. of International Economics and Social Affairs (DIESA), p.16.

- facilitation of action aimed at harmonizing or pooling transport services within the region or sub-region"3/

5. Within the specific African context ECA observed in a document which it submitted to a meeting of African Ministers of Transport in 1984 that:-

"many facets of efforts needed to improve transport conditions in Africa require 'software' (human and institutional features) rather than 'hardware' (physical) answers..... Thus, there is an urgent need to improve the quality of human resources at all levels throughout the sector, and also for them to be effective in the administrative and cultural environment in which they operate. Support from the international community is therefore a priority contribution to African countries in their efforts to improve the quality of managers and technicians at all levels and modes in the sector" 4/

6. The ECA further noted that:-

"The Eastern and Southern African Management Institute (ESAMI) based in Arusha, Tanzania, is the only sub-regional institute which conducts high-level transport seminars....covering transportation project management, transport economics and general transport management for transport planners, engineers and senior managers". It then went on to suggest that:-

"Institutes of ESAMI's type require strengthening to cover all English speaking countries.... and that the institutional build-up stage of the 1960's and 1970's has now to be replaced by institutional strengthening whereby governments and aid donors need to concentrate on improving the quality of trainees, teaching methods and equipment of existing institutions" 5/

Finally, the ECA concluded:-

"in respect of high-level training, it is doubtful whether the range and numbers likely to be needed can all be produced by institutions in advanced countries. There is the added risk of large losses at the high skill levels through the brain drain to ..... developed countries. Taking these points against the background of the requirements ..... it is reasonable to conclude that while external assistance through executive manpower development programmes would be of great benefit, the bulk of the manpower problems in transport will have to be solved by institutional arrangements within the region.

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3/ Ibid p. 17.
4/ ECA Document DEC/TRANSCOM/CM/4(T) Fourth Conference of African Ministers of Transport, Communications and Planning, Conakry, Guinea Feb. 1984, p.49.
5/ Ibid pp 50-51.

> Technical assistance.....should, therefore, be geared towards development of training institutions within Africa (including through) ....close association by institutions (in developed countries) as an effective way of transforming appropriate technologies" 6/.

7. Within the context of some problems of transport development in Africa a United Nations report 7/ observed that the beginning of the Second United Nations Development Decade has found the African region confronted with acute but insufficiently recognized problems in transport development which call for close and urgent study and aciton. The report stated that:

> "It would be difficult to name a University where the type of graduate education needed in the field of transport problems can be found in Africa. The absence of such a programme is a measure of the degree to which the international community has failed in this area. The fact that transport is often the largest single sector of expenditure in low-income countries makes this record of neglect especially damaging to development efforts".

8. The implication of the above quotations are, mainly, that there is an urgent need to consider the manpower bottlenecks that rapid development of transportation in Africa is likely to lead to in the 1980's and beyond. This bottleneck is seen as significant not only quantitatively but also qualitatively. Although external assistance through executive development programmes would be of great benefit, the bulk of Africa's manpower and training problems will have to be solved by institutional arrangements within the Region.

9. The importance of improving transport at Africa's stage of development has been recognized in several ways: Transport was given top priority in the development strategy of subregional organizations such as the Southern African Development Co-ordination Conference (SADCC), the Economic Community of West African States (ECOWAS) and the Preferential Trade Area (PTA) for Eastern and Southern African States. A substantial part of the World Bank's and African Development Bank's (ADB) lending is in transport. Many African countries are making major efforts themselves - often investing 20 to 25 per cent of their limited resources in transport. It was in recognition of the need to highlight the importance of transport and communications that in March 1977 the ECA Conference of Ministers adopted a resolution recommending that a decade be proclaimed in order to focus attention on the special [illegible] Africa in these sectors. This recommendation was endorsed by the Economic and Social Council (ECOSOC) at its meeting in July 1977 and the United Nations Transport and Communications Decade in Africa (UNTACDA) was officially proclaimed by the General Assembly in December 1977. A particular objective of the Decade is to strengthen and fully africanize planning and management of transport infrastructure and transport services including the identification

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6/ Ibid p.[illegible].
7/ Some problems of transport development in Africa in the 1970's and 1980's.

and building up of regional centres for high-level manpower development in transportation planning and management. These objectives re-affirm the emphasis in the Lagos Plan of Action on "the importance of trained manpower as an input to activities in the various production sectors and support services as well as in the education and training sector as the producer of skills and know-how for its own needs and for other sectors" 8/

1.2 Context of the study

10. The objective of the study is to give an indication of the manpower and training needs in general and multimodal transport in Africa. The study forms the first phase of a sectoral survey covering all transport modes. The second phase of the survey covers manpower and training needs in roads, railways, inland water, air and maritime transport. The need and justification for giving priority to the development of human skills and knowledge as a basis for improving the effectiveness and efficiency of the transport subsector in Africa has been enunciated many times in a number of documents prepared by international and intergovernmental organizations. The essence of this concern is captured in the preamble to the Terms of Reference for the study which states in part that:

> "the provision and maintenance of transport infrastrucute and the daily operation of transport services are placing an increasingly growing demand on technical, administrative and managerial capabilities of Africa's people. As Africa is to cope with developments in high technology in some aspects of the transport sector, training has also to be geared towards the technological developments. The development of skilled and well-trained personnel must, therefore, increase. Thus, there is an urgent need to improve the quality of human resources at all levels throughout the sector. The development of skills of managers and technicians at all levels will, for example, reduce the high maintenance costs incurred by returning equipment to its developed country source for maintenance, or the bringing of experts from home countries".

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8/ World Development Report, 1983 World Bank, Washington D.C. p.107- 109 and Lagos Plan of Action, Ch. IV on Human Resources Development and Utilization p.37. See also Article 85 of the Lome III Convention: "Particular attention shall be given to training ACP nationals in the planning, management, maintenance and operation of the transport and communications system".

## 1.3. The terms of Reference

11. Under the terms of reference for the survey the report is to cover:

- an analysis of the present manpower situation covering general and multimodal transport;
- an analysis of training needs in general and multimodal transport and recommendations on how to meet the identified needs;
- determination of the level and the nature of training schemes, the target groups to be trained and the training process to be used.

12. In the context of the Terms of Reference the term "general and multimodal transport" refers to a rational co-existence between the various modes of transport. The survey is therefore, intended to cover manpower and training needs of two categories of manpower in transport as follows:

(i) Senior and middle level management, administrative and technical staff in ministries directly responsible for the planning and programming functions of the supply and demand of transport in a country and units dealing with transport in the ministries of planning, finance, trade, industry, agriculture etc. including other national administrative bodies i.e. central statistical offices, transport co-ordination offices, and secretariats of inter-governmental bodies etc.

(ii) Senior and middle management, administrative and technical staff dealing with problems of international multimodal transport, i.e multimodal transport operators, customs officials, insurance agencies, clearing and forwarding organizations etc.

13. Manpower and training needs of individual modes of transport are surveyed and presented separately in the second phase of the study.

14. The detailed Terms of Reference for this survey are included in the report as annex I.

## 1.4. Organization and programme of work

15. The work was organized and executed in three stages: stage one involved the design of a comprehensive questionnaire with the objective of eliciting data and information on the present situation with regard to manpower and training needs in general and multimodal transport; stage two involved field missions to selected countries; and stage three was the

preparation of country reports, analysis of questionnaires received from countries which were not visited and preparation of the analytical report based on information and data collected during field visits and those from questionnaires. Field visits by consultants covered Central African Republic, Egypt, Ethiopia, Morocco, Tanzania and Zimbabwe. Questionnaires sent to all African countries were received from Burundi, Ivory Coast, Egypt, Ethiopia, Gambia, Lesotho, Madagascar, Mali, Morocco, Niger, Rwanda, Somalia, Togo, Uganda and Zambia. Information was readily available on Benin, Burkina Faso and Kenya. As a whole, information used as a basis of report preparation was obtained from 24 African countries.

## II. SUMMARY OF FINDINGS AND RECOMMENDATIONS

### 2.1. General

16. Shortage of skilled manpower is endemic in general and multimodal transport. The survey has concluded that ministries of transport have difficulties in acquiring adequate skilled and competent manpower resulting into their poor performance. Other ministries that deal with transportation matters in ministries of planning, trade, industry, and agriculture also do not have adequate qualified staff to handle transport related problems. The root cause of the shortage is poor education planning, whereby little emphasis is given to technical training.

To enhance adequately recruitment into the technical trainee ranks of general and multimodal transport personnel and avert real crisis, it is recommended that:

(i) Governments should ensure that the education base at primary and secondary school levels should be properly supplied with instructors and teachers who are not only pedagogically qualified, but are also equipped with the adequate methodology as modern teachers of technical subjects. Such teachers should be paid salaries that reflect adequately their scarcity value and the extra demands on them.

(ii) the teaching of technical courses at university level should be reviewed by the ministries of education in order to bifurcate them with general and longer special degree programmes. Introduction on basics of transportation engineering and transport economics in general undergraduate engineering and economics programmes is overdue in Africa; and is a modest way by which the region can start developing indigenous transport specialists.

17. It is recommended that public service commissions in various African countries should see to it that changes in salary differentials and promotional opportunities of technical and technological personnel in the public service of African countries, be made as soon as practicable (in a few African countries some of the changes have been initiated). The benefits of the technical training are to be properly reflected in such technical oriented sectors like transportation.

18.
In order to retain well-qualified professionals for long in the civil service the ministries responsible for terms of service should design better schemes of service, improve conditions of service and give better incentives including higher salaries to professional staff. In the transport sector, it has been noticed that the only way a professional can move up is to accept an administrative position. For this reason many talented professionals do leave transport ministries soon after they have attained the necessary experience for professional registration and more to the private sector where they get higher salaries and better conditions of service.

## 2.2 Manpower policy planning and utilisation

19. Ministries dealing with manpower planning at national levels are overwhelmed with day-to-day manpower problems and are, therefore, not in a position to effectively handle problems of manpower policy and planning for individual development sectors. It is, therefore, recommended that transport ministires should take up manpower planning and utilisation fucntions of the transport sector and liaise with ministires dealing with manpower planning at national levels in matters concerning transport manpower development policies.

20. Many transport ministires in Africa lack units for manpower planning which should carry out:

- collection and maintenance of accurate personnel data:
- review of staffing levels in relation to the work-load;
- determination of the numbers and types of personnel to be recruited over a period of time;
- assessment of training requirements from personnel data and training records; and
- drawing up of a strategy for manpower and training need.

It is recommended that ministries of transport which have not yet established manpower planning units to carry out the above functions should do so as soon as practicable.

21. One way by which African countries could reduce the problem of manpower shortage in the public service is to encourage and facilitate the return of their nationals from the advanced countries. A number of countries i.e. Egypt, Sudan, Malawi etc. have reported that manpower brain drain is one of the causes for manpower shortages in technically oriented sectors like transportation. Latin American countries have partly succeeeded in combating brain drain through a programme called "Return of Talent Programme".

It is recommended that African countries should learn from the success of Latin American and other developing regions and should adopt and implement policies that would help in combating manpower brain drain.

22. The survey has identified five areas where manpower needs are critical in general and multimodal transport. These are:

- transport policy, planning, and co-ordination;
- transport investment appraisal;
- transport projects evaluation, analysis and management;
- the legal aspects of transportation; and
- transport statistics.

Many countries depend on services of expatriates in these fields and it is recommended that priority should be given to these particular fields by transport ministries in their Africanization programmes.

23. Part of the manpower shortages in general and multimodal transport is caused by limitations imposed by poor institutional and organization arrangements in transport ministries such as:

- poorly designed organization structures which are either incompatible with the activities expected of the organization (having been overtaken by national or sub-regional developments) or inadequate to provide proper manning of the organization; and

- poor co-ordination with transport agencies.

It is recommended that transport ministries should review their organizations structures from time to time, thus enabling them to determine manpower priorities in transport, diagnosis of existing shortages, and projection of future manpower requirements.

2.3 Training needs:

24. It is recommended that the training policy within transport ministries and other public organizations dealing with manpower development in transport should be an integral part of personnel policy so that the training effort can be more directly linked to manpower and individual career developments.

25. A good number of ministries responsible for transport development in many African countries have their in-house training institutions. Many of these institutions lack certain government support and are, therefore, unable to fulfil their training role. It is recommended that ministries which run their own in-house transport training institution should provide them with:

- adequate financial allocations;
- adequate physical facilities;
- sufficient training equipment and teaching aids; and
- resources for the recruitment of the right kind of professional, administrative, and clerical support staff.

26. Training programmes for the development of general and multimodal transport should be designed to reflect development planning and programme implementation requirements of the transport sector. It is recommended that national training institutions specializing in transport should, therefore, integrate their training efforts into the training needs of their client organizations and should relate their training programmes to current and future manpower needs in transport.

27. Training offered by sub-regional transport training institutions, like ESAMI, are well adapted to a wide spectrum of local conditions and are suitable for senior and middle technical and administrative staff in the transport sector. It is recommended that the international community and African Governments supporting such institutions should step up their financial and material support to facilitate their smooth and successful operations.

28. Since ESAMI coverage is concentrated in the Eastern and Southern African subregion, and no institution of a similar standard and orientation in the field of transport is available anywhere in Africa, it is recommended that consideration should be given by African governments for the early establishment of other similar institutions which would serve the transport training interests of other subregions.

29. There is a need for African countries to reduce their dependence on overseas training in transport. This is not only because of the expenses involved but also because overseas universities programmes are not attuned to African conditions, therefore, some of the techniques taught are not easily applicable in the African environment.

It is recommended that although overseas training is still justified in cases where source specialized occupation and professional training demand is too modest to warrant the establishment of special institutions locally, efforts should be made by groups of African countries at subregional levels to consider the establishment of African institutions of higher learning in transport, since none is available in the region. Universities with faculties of engineering, geography and/or economics, where lectures in transportation as a subject are being delivered should be given priority in considerations for the establishment of institutions of higher learning in transport.

30. African countries do receive invitations to participate in training programmes in various fields of transport which are arranged by transport organizations in developed countries, UN agencies dealing with transportation matters, and various intergovernmental organizations in Africa and abroad. It is recommended that African governments should, in future, make better use of such training opportunities by nominating qualified participants with relevant work experience, adequate academic qualifications, and proven training capability.

31. To make training and development of senior and middle administrative and technical staff in transport more effective and relevant, it is recommended that training establishments and institutions should develop training needs identification procedures which involve transport organizations and the target groups to be trained.

32. The data and information received from the 24 African countries covered by the survey show that training and manpower needs in transport are more or less identical. It is therefore recommended that transport ministries and training institutions should focus their training on fields listed under paragraph 22.

### 2.4 Training curricula

33. Training curricula for senior and middle technical administrative staff in general and multimodal transport in most African countries have to be reviewed and updated in the light of the actual task performed. It is recommended that training curricula should, as far as is possible, be drafted by training institutions in consultation with the target groups concerned and should be subject to periodic reviews.

34. In most African countries, there is a wide gap between the requirements of a training curriculum available for training in general and multimodal transport and the training capacity to deliver the services. There is urgent need for African ministries of transport, intergovernmental organizations and UN agencies dealing with transport in the region, to devise ways and means to establish training of trainers programmes at sub-regional levels to upgrade training capability in the field of general and multimodal transport.

## III. THE PRESENT MANPOWER SITUATION

### 3.1 The general education and manpower situation in Africa

35. Education planning has very much in common with manpower planning. Education, being a major weapon in the eradication of ignorance and poverty, has been accorded priority by developing countries in their attempt to turn societal aspirations into reality. The education sector in any country, particularly in developing countries, is very strategic:- as a proportion of government budget; as a supplier of trained manpower that is essential for the accomplishment of other development objections; and as an employer of that same trained manpower.

36. Data collected during field missions indicate that illiteracy is still high in Africa (Morocco, 65 percent, Tanzania 26 percent, Zimbabwe 31 percent and Egypt 50 percent). Primary education is available to children from 6 to 11 years of age in some of the countries visited (Tanzania, Kenya and Zimbabwe); and some countries have high enrollment of children in their primary schools ( Algeria 82 percent, Egypt 71 percent, Morocco 65 per cent).

37. Enrollment of secondary school children is an average of 50 percent of those who successfully complete primary education in Northern African countries; and the average falls to 15 percent in sub-Saharan Africa.

38. According to a World Bank survey expenditures on schooling in Africa already claim a large portion of GDP- around 4 percent in two thirds of sub-Saharan African countries for which data are available. And, more important they claim about 16 percent of the total, on average, more than any other Government function except general administration.

39. As for higher education, polytechnics and universities are found in many African countries including various specialised national training institutions dealing with specific subsectors of economic development. But there is no institution of higher learning in the region which specialises in transportation disciplines and this is the root cause of inadequacies in specialised manpower in the transport sector. As for the availability of transport economists and engineers, the transport ministries rely mainly on those trained in overseas institutions or on graduates from countries who have obtained general degrees and have to undergo in-house and postgraduate training before they can effectively work in the field of transport. All ministries of transport that were visited have expressed their concern regarding the shortage of qualified manpower.

### 3.2. Fields where manpower and training needs are critical in general and multimodal transport

40. Manpower and training needs in general and multimodal levels are more critical in the following main fields:

(i) transport policy, planning and co-ordination;
(ii) transportation projects appraisal;
(iii) transport projects analysis, evaluation and management;

(iv) the legal aspects of transportation; and
(v) transport statistics.

The consequences of shortages of manpower in these fields have adverse effects on the development of transport in the region as discussed below:-

(i) Transport policy, planning, and co-ordination

41. In colonial days, the development of transport infrastructure in many African countries focused on serving external trade. Many countries have changed this, and are now mostly concerned with the development of national networks and those connecting them with neighbouring countries. The principal responsibility for financing transport investments and recurrent investments in the transport sector in many African countries lies with the ministries of finance and planning. Those visited during data collection stage of the survey expressed concern regarding the shortage of trained staff necessary for carrying out transportation planning and co-ordination. The fact that countries which have recently prepared their transport master plans i.e. Botswana, Kenya and Malawi had to rely heavily on manpower provided by foreign consulting organizations confirms the concern voiced by many countries regarding the shortage of indigneous transport policy makers and planners.

(ii) Transport investment appraisal

42. Many countries have expressed deep concern in lack of manpower for appraisal of investments which transport ministries do undertake in collaboration with public sector transport organisations. A few countries with skeleton manpower in transportation projects appraisal have their personnel still faced with inadequate knowledge of techniques for projects appraisal. Some transport ministries in the region are, therefore, not in a position to come up with policy guidelines on matters concerning investments in transportation equipment and infrastructures.

(iii) Transport projects evaluation, analysis and management

43. Transport programmes are generally ranked first or second in magnitude among the items included in development plans of many African countries. In most development plans of African countries the construction of transport facilities absorbed 30 to 40 per cent of total investment over the past two decades. But because the ministries dealing with transportation projects do not have adequate manpower to handle detailed projects evaluation and appraisal, the ministries are unable to develop cost-benefit analysis techniques suited to local conditions. Many African countries are, therefore, using methodologies which emerged in developed countries. Such methodologies have serious limitations, because conditions in African countries are different, especially with respect to financial and human

resources, the level of development and the political context of the decision-making process. Many countries therefore rely on services of experts from overseas countries whose evaluation methods do not take local conditions into consideration. Ministries of transport should make efforts to have trained manpower in the field of projects analysis, evaluation and management so that investments on transportation projects represent a good use of resources allocated to them.

(iv) Legal aspects of transportation

44. Transport is a field where new evolutions and conventions need to be properly interpreted and kept up-to-date. Several multinational conventions are often revised with a view to keeping abreast of new developments. Since revisions or amendments to conventions require lengthy consultations with government ministries and agencies dealing with transport, there is a need for each African country to have qualified transport law experts who can effectively deal with issues and difficulties of transport conventions. Because there is a shortage of manpower with knowledge of transport law, the majority of African countries have difficulties in becoming contracting parties to many transport conventions i.e. the Kyoto Convention, Customs Convention on Containers, International Multimodal Transport Convention etc. The problem has extended to the related field of transport facilitations, and many African countries are already affected by the existence of many non-physical barriers to transportation. With the formation of various economic groupings in the region i.e. ECOWAS, ECCAS, PTA etc. which depend on transport, adoption of several bilateral and multilateral agreements will facilitate co-operation and the willingness to remove the traditional impediments to the developments of African instructional transport.

These problems cannot be solved without manpower with sufficient knowledge of the legal aspects of transport.

(v) Transport statistics

45. Increases in income, population, investments and urbanization have stimulated demand for transport services in many African countries, but the data to document the transportation effects of the increased demand are poor and widely scattered. This is partly because transport ministries do not have manpower for the development of plans for statistical information even in countries where the basic transport statistics are available at the levels of public and private transport sectors. Transport statistics in many African countries are not kept in an efficient manner so as to be easily and speedily accessible. To overcome this problem, transport ministries should have manpower with expertise in data collection, processing, storage and retrieval. Existing transport statistics units in transport ministries should be strengthened with manpower qualified in transport statistics.

46. Successful efforts have been made by some African countries in the establishment of transport statistics units as part of national statistics bureau, Malawi is a good example where a transport statistics unit is functioning successfully as part of national statistics office and African countries which have not taken similar measures should be encouraged to do so, using the Malawi approach.

### 3.3 Factors contributing to manpower shortages in general and multimodal transport

47. Like many other developing countries, African labour is characterized by a fundamental disequilibrium which is manifested by a persistent shortage of high level and skilled professional, technical, and administrative manpower. The transport sector has varying degrees of manpower problems at the levels of senior and middle technical and administrative staff. Some of the factors contributing to the acute shortage of manpower can be highlighted as follows:

#### (i) Inadequate emphasis given to technical education by African countries

48. A shortage of qualified manpower in the transport sector has necessitated a heavy dependence on expatriates by many African countries. In some transport ministries in Africa, strategic senior positions still remain vacant for a long time. One main reason for not filling the posts is that transport, being a technical discipline, is badly affected by the distribution of students and graduates between technical based and non-technical based study fields. A shortage of teaching staff in the technical disciplines was reported in almost all the countries visited. The inadequacy of students with a sound background in science and mathematics for enrollment in technical-oriented studies tend to perpetuate the acute shortage of technical manpower for the transport sector and other sectors of economic development. As for the training of specialists such as engineers, economists and planners, each country visited presents a different situation, though as a whole the flow of graduates in technical fields is far from sufficient. Egypt, with a relatively well developed university education system, trains about 500 economists, 6,000 engineers and 18,000 managers annually. These figures easily compare with those in some industrialized countries. Morocco stands in the middle-level position with about 100 engineers and 300 managers trained in various universities annually. On the contrary the flow of technically oriented graduates in sub-Saharan African countries are much lower. Zimbabwe trains an average of 20 engineers a year covering civil, electrical and industrial engineering. Ethiopia trains an average of 30 engineers over the same period. Although the information collected during field missions does not allow for an accurate assessment of training which is presently being carried out in the transport sector, the fact still remains that the acute shortage of African graduates in technical oriented disciplines has adverse effects in the transport sector. In Swaziland, for example, a report by consultants on Education and Training[1/] has noted that:

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1/ From "Status and Development of Education in the Kingdom of Swaziland". Education and Training Sector Review prepared by consultants on behalf of the Ministry of Education.

"There is a shortage of high and middle level manpower; many of the posts in the private sector are filled by expatriates. There is a chronic shortage of Swazis with high level competence in technical and scientific fields. There is a great need for craft based professional workers. School teachers are not entering these fields in sufficient numbers to meet manpower requirements. They tend to be employed in a narrow range of occupations i.e. clerks, typists, book-keepers, service and sales workers etc. Agricultural training among form III teachers is negligible. With a view to providing pupils with education to progress them to participate more fully in industrial, agricultural and community development, the school curriculum is being diversified in the direction of more practical and vocational subjects. Engineering science, basic electronics and technology should be introduced in selected schools".

Table I showing the enrollment of students for higher education and technical training in Swaziland is a typical illustration of what is common in many African countries, regarding the availability of technical manpower.

Table I Enrollment in Higher Education and Technical Training in Swaziland : Relevant Courses only

| Course | 1979/1980 | 1980/1981 | 1981/1982 | 1982/1983 | 1983/1984 |
|---|---|---|---|---|---|
| University of Swaziland | | | | | |
| B.A. | 196 | 195 | 317 | 223 | 279 |
| B.Sc | 144 | 203 | 251 | 304 | 340 |
| Other Degree | 150 | 200 | 191 | 218 | 205 |
| Diploma in Business | Figures not available. | | | | |
| Swazi Institute of Technology: | | | | | |
| Post Matric (Technical Training) | 217 | 207 | 423 | 274 | 358 |
| Pre Matric (Artisan Training) | 197 | 259 | 172 | 253 | 281 |

49. The problem is not only limited to those countries with a low number of institutions for higher learning. Nigeria with the highest number of universities in Africa is also faced with similar problems. The Federal Ministry of Works latest available data on staffing situation indicates that less than 50 percent of posts for engineers and trainee engineers are filled, and 30 percent of posts for technicians are vacant.

50. The staffing position of the Roads Department, Ministry of Works and Supply is given in table II below. The table shows that there is a shortage of professionals at the level of executive engineers and senior technical staff.

TABLE II

PERCENTAGE OF FILLED TO ESTABLISHED POSITIONS
(F.Y. 1980 NIGERIA)

| STAFF CATEGORY | HIGHWAY DIVISION Percent | CIVIL ENGINEERING SERVICES DIVISION Percent |
|---|---|---|
| Ass. Chief engineers | 72 | 64 |
| Principal Engineers | 49 | 46 |
| Senior engineers | 32 | 29 |
| Engineers | 62 | 14 |
| Technical Officers | 22 | 30 |
| Technical Assistants | 19 | 46 |

No. of positions in Fed. Highways Dept.
(F.Y. 77.78)

| | Established | | | Filled | | |
|---|---|---|---|---|---|---|
| | Regular | Contract | Total | Regular | Contract | Total |
| Chief Engineers | 38 | 18 | 56 | 23 | 8 | 31 |
| Ass. Chief Engineers | 22 | - | 22 | - | - | - |
| Principal Civil Engineers | 42 | 40 | 82 | 22 | 32 | 54 |
| Senior civil Engineers | 30 | 45 | 75 | 18 | 11 | 29 |
| Civil Engineers (Grade 1) | 40 | 20 | 60 | 16 | 14 | 30 |
| TOTALS | 172 | 123 | 295 | 79 | 65 | 144 |

NOTE: Contract= Expatriate

51. Only a few countries have reported satisfactory manning levels. In Kenya, for example, the Ministry of Transport and Communications has a policy of recruiting ten to fifteen graduate engineers to undergo a comprehensive training so that after three years they are able to be registered to work independently as project engineers. The result of this effort is that in the ministry's roads department, the number of Kenyan engineers increased from 14 in 1970 to 281 in 1982. Almost all the posts, in the ministry, at the professional level, are filled by qualified nationals and the ministry retains only a few expatriates who are supported by technical assistance from bilateral sources.

(b) The brain drain

52. Like other developing countries, Africa is confronted with considerable outflow of high-level manpower. It was not possible to obtain accurate and up-to-date data on the brain drain for any specific section, transport included, but discussions held with officials in some ministries of transport during field missions confirmed that the transport sector, in a number of African countries, is affected by the brain drain. Egypt, for example, reported that 20 percent of the country's executive staff and engineers left the country to the USA between 1969 and 1979. Sudan lost 44 percent of its engineers during the same period. The departure of such specialists like engineers and economists to developed countries must have direct effect on the availability of those categories of staff in the sectors where their services could have been effectively utilised. Indicative figures which many countries have given on brain drain refer only to those professionals who immigrated to developed countries or other African countries, but excludes those who got their training in developed countries, but have not returned to their home countries after completing their training.

53. Lasting and effective solutions to the brain drain problem can be found if African countries can carry out a sound economic and manpower planning, coupled with efforts to gear training programmes towards labour market demands. African countries are not involved in the deliberate promotion of manpower export to developed countries. Instead they have made efforts to encourage their nationals to return home from advanced countries. African countries can do better in having their nationals back home if they learn from other developing regions. Latin American countries have worked together in getting their nationals home from developed countries through a programme known as "Return of Talent Programme". The programme, which is pursued by Latin American countries with the cooperation of the Intergovernmental Committee on European Migration (ICEM) in Geneva, is aimed at encouraging and facilitating the return of middle and high-level Latin American manpower to their countries of origin from the developed countries where they reside[2/].

(c) Inadequacy of institutional arrangements for the promotion of manpower development in the transport sector

54. In many African countries manpower planning is in most cases carried out under the guidelines of centralised ministries dealing with manpower

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2/ ILO Tripatrite World Conference on Employment: Background papers Vol.II Geneva, 1976, pp 161-167

issues at national levels. These ministries are usually placed under the offices of the President or offices of the Prime Minister. In Tanzania, for example, centralised manpower issues are dealt with in the Ministry of Labour and Manpower Development (MLMD). The MLMD takes care of manpower issues such as training, manpower allocation, deployment and recruitment of manpower etc. Many African countries have similar arrangements and sectoral ministries are left responsible only for minor manpower activities such as planning, administering, conducting, and evaluation of training for employees in their sector. As for the ministries of transport, there is a need to strengthen their manpower units since manpower ministries dealing with manpower at national levels are in most cases overwhelmed with day-to-day manpower problems, which leaves them very little time for transport manpower policy analysis and planning as could be carried out by the ministries of transport themselves. It is therefore recommended that ministries of transport should play a dynamic role in manpower planning for the transport sector. This should include the determination of transport manpower priorities, diagnosis of existing shortages, projections of future requirements, and the fixing of targets for training programmes and future manpower requirements. Many countries visited did not have manpower planning activities included in the functions of the transport ministry. This has resulted in ineffective manpower planning in the transport sector which, in turn, has resulted inter alia not only in lack of projections of manpower supply and demand for the sector, but also lack of co-ordination of the various manpower development efforts.

55. Transport ministries should, therefore, carry out manpower planning and development programmes within their ministries. National manpower development ministries should deal mainly with matters of general manpower policy for the transport sector.

## IV. COUNTRY BY COUNTRY ESTIMATES FOR MANPOWER AND TRAINING NEEDS IN GENERAL AND MULTIMODAL TRANSPORT

### 4.1 Estimated present manpower needs

56. An estimate of manpower needs is carried out based on data on present manpower needs of eight countries, namely Burundi, Central African Republic, Egypt, Ethiopia, Cote d'Ivoire, Morocco, Tanzania and Zimbabwe which are shown in table III below.

Table III: Data on countries involved in general and multimodal transport

| Countries | Senior Managers | Middle Level Managers & skille staff | G.N.P. $10^9$\$ | G.N.P. P.Cap. \$ | Export $10^9$ \$ | Import $10^9$ |
|---|---|---|---|---|---|---|
| Morocco | 25 | 1,590 | 18.0 | 870 | 2.28 | 3.84 |
| Egypt | 30 | N.C. | 30.0 | 680 | 4.00 | 2.91 |
| C.A.R. | 10 | 230 | 0.75 | 330 | 0.13 | 0.13 |
| Burundi | 7 | 170 | 1.10 | 250 | 0.07 | 0.15 |
| Cote d'Ivoire | 25 | 900 | 10.5 | 1,200 | 2.48 | 1.77 |
| Zimbabwe | 15 | N.C. | 7.0 | 850 | 1.44 | 1.52 |
| Tanzania | 10 | N.C. | 5.0 | 270 | 0.51 | 1.07 |
| Ethiopia | 12 | N.C. | 4.5 | .40 | 0.37 | 0.63 |

The programme for calculating manpower needs comes into operation once the following data are completed:

- senior managers: present number,
- middle level managers and skilled staff: present number
- GNP and GNP per capita: latest figures (1982 very likely) in million dollars (GNP) or in dollars (GNP per capita).
- Estimation of exports and imports: latest figures known in milliard dollars too,
- The established estimation is based on FOB values and does not include the import and export services.

57. A mathematical model based on trainer co-ordination[1/] was used to determine estimated manpower requirements for the whole region by country. The model is based on established links which correlate manpower requirements in general and multimodal transport to specific economic activity indicators, namely the Gross National Product (GNP); the population of each country; and the value of external trade of each country. Country by country results of the simulation model are shown in table IV... below.

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1/ For detailed explanation of the model see Annex II

TABLE IV Estimated manpower requirements for each African country[2/]

| Countries | G.N.P. $10^9$ $ | G.N.P. p.cap | External trade | ND(a) | NE(b) |
|---|---|---|---|---|---|
| **Mediterranean countries** | | | | | |
| Algeria(1) | 43 | 2,100 | 23,24 | 39 | 2,300 |
| Egypt | 30 | 680 | 11,91 | 34 | 2,800 |
| Libya(1) | 25 | 8,100 | 28,26 | 20 | 1,000 |
| Morocco | 18 | 870 | 6,12 | 23 | 1,400 |
| Tunisia | 95 | 1,500 | 5,23 | 25 | 1,200 |
| | | | | 141 | 8,700 |
| **Sahelian Countries** | | | | | |
| Upeer Volta(2) | 1,5 | 200 | N.A. | 10 | 250 |
| Mali | 1,4 | 200 | 0,42 | 8 | 300 |
| Mauritania | 0,7 | 420 | 0,65 | 10 | 150 |
| Niger (2) | 1,5 | 300 | N.A. | 10 | 300 |
| Chad (2) | 0,6 | 130 | N.A. | 9 | 100 |
| | | | | 47 | 1,100 |
| **Western Africa** | | | | | |
| Cape Verde (3) | 0,11 | 350 | N.A. | - | - |
| Senegal (2) | 3,2 | 500 | N.A. | 12 | 300 |
| Guinea Bissau (3) | 0,13 | 330 | N.A. | - | - |
| Guinea (2) | 1,6 | 330 | N.A. | 10 | 150 |
| Sierra Leone | 1,0 | 300 | 0,43 | 9 | 100 |
| Liberia | 1,1 | 560 | 0,96 | 11 | 200 |
| Ivory Coast | 10,5 | 1,200 | 4,25 | 22 | 1,000 |
| Ghana | 8,0 | 650 | 1,50 | 13 | 350 |
| Togo | 1,0 | 400 | 0,55 | 10 | 150 |
| Benin | 1,2 | 300 | N.C. | 10 | 100 |
| | | | | 97 | 2,350 |
| **Central Africa** | | | | | |
| Nigeria(1) | 24 | 940 | 34,61 | 20 | 1,000 |
| Central African Rep. | 0,75 | 330 | 0,31 | 9 | 200 |
| Cameroon | 7,2 | 840 | 2,78 | 17 | 650 |
| Equatorial Guinea | 0.09 | 980 | N.A. | - | - |

2/ Requirements for senior and middle technical, administrative and technical staff in general and multimodal transport.

| Countries | G.N.P. $10^9$ $ | G.N.P. p.cap $10^9$ $ | External trade $10^9$ $ | ND(a) | Ne(b) |
|---|---|---|---|---|---|
| Gabon (2) | 3,4 | 6,100 | 3,04 | 15 | 200 |
| Congo | 2,0 | 1,250 | 1,87 | 13 | 200 |
| Zaire (4) | 6,0 | 200 | 1,22 | 10 | 400 |
| | | | | 84 | 2,650 |
| Eastern Africa | | | | | |
| Sudan | 7,8 | 410 | 2,44 | 13 | 600 |
| Ethiopia | 4,5 | 140 | 1,00 | 9 | 250 |
| Djibouti | 0,2 | 570 | N.A. | - | - |
| Uganda | 6,6 | 470 | 0,77 | 10 | 550 |
| Kenya | 7,3 | 430 | 2,94 | 14 | 700 |
| Somalia | 1,1 | 220 | 0,49 | 8 | 100 |
| Tanzania | 5,0 | 270 | 1,58 | 11 | 350 |
| Burundi | 1,10 | 250 | 0,22 | 8 | 150 |
| Rwanda | 1,30 | 250 | 0,31 | 8 | 200 |
| | | | | 81 | 2,900 |
| Southern Africa (5) | | | | | |
| Angola (3) | 5,2 | 700 | N.A. | 13 | 500 |
| Zambia (4) | 3,0 | 500 | 2,14 | 13 | 700 |
| Malawi | 1,5 | 240 | 0,46 | 8 | 350 |
| Mozambique | 9,8 | 950 | 2,05 | 12 | 500 |
| Namibia | 1,6 | 1,400 | N.A. | 11 | 150 |
| Botswana (4) | 0,7 | 800 | 1,08 | 13 | 550 |
| Zimbabwe (4) | 2,0 | 850 | 2,96 | 17 | 1,000 |
| Swaziland (3) | 0,5 | 880 | 0,82 | - | - |
| Lesotho (3) | 0,75 | 580 | N.A. | - | - |
| Madagascar | 2,5 | 250 | 1,0 | 10 | 250 |
| | | | | 97 | 4,000 |

(a) Number of senior managers
(b) Middle level managers and skilled executive staff.

Remarks to table IV

58. The numbers (1,2,3 and 4) placed against some countries are explained as follows:

(1) ...Stands for oil producing countries whose export data have been converted by deducting oil exports and by using a formula which excludes the GNP per capita, which is artificially inflated because of the high revenue from oil.

(2) ...Stands for countries where the value of the foreign trade is unknown; the numbers are linked to the GNP by lenear regression.

Senior managers: Na = 9 + 0.8 GNP

Middle level and skilled operational staff: Ne = GNP/0.006 (land-locked countries)

Ne=GNP/0.011 (coastal countries)

(3) Stands for those countries not taken into account because they have more or less no foreign trade (foreign trade < 0,2) or because they are too dependent on a neighbouring country due to their land-locked positions i.e. Swaziland and Lesotho.

(4) ...Stands for countries for which calculations are done by using an intermediary coefficient between the land-locked and the coastal countries, either because the country is semi land-locked i,e, Zaire or because it is situated outside the zone of the validity of the formula.

4.2 Training needs

59. The results of detailed analysis of field data indicated that in general and multimodal transport only about 30 out of an estimated 500 senior and middle level transport personnel have the relevant training in transport. Training should, therefore, be organized for more than 90 percent of the staff currently employed in various ministries dealing with general and multimodal transport problems - that is a number nearly equal to the present actual staff. Areas in which they should be trained were already discussed in part III section 3.2 of this report.

## V. TYPES OF TRANSPORT TRAINING INSTITUTIONS AVAILABLE IN THE REGION

60. Training institutions for staff in various ministries dealing with general and multimodal transport are limited in Africa. Many countries in the region have modal oriented training institutions which operate like training wings of the various national transport agencies. Although some personnel in the ministries of transport can benefit from training programmes of modal oriented institutions, middle and senior level staff can only benefit from training carried out by national transport training institutes, subregional training institutes, overseas transport training institutions, and those conducted by UN and Intergovernmental agencies.

### 5.1 National training institutions

61. In almost all African countries, ministries dealing with transport have some type of in-house arrangements for training various cadres of staff, especially middle and low level technical and administrative staff i.e. equipment operators, supervisors, inspectors etc. These in-house institutions found in the various countries differ greatly in size and range of training offered. For these institutions to carry out training effectively, they require adequate physical facilities (class-rooms, offices, hostels etc.), adequate supply of training equipments, teaching aids and materials and enough skilled trainers. The conditions of many of those own-institutions that were visited lacked seriously in many of these basic requirements of a training institution; many are housed in temporary delapidated and inadequate facilities, training equipment and teaching aids are inadequate or are not well developed and trainers/instructors are not available while the few who are available are not well motivated.

For these institutions to perform their jobs effectively, attention should be given to the provision and improvement of their basic requirements if they are also to contribute to the development of training for middle and senior staff in the transport sector.

### 5.2. Sub-regional training institutes

62. Regarding sub-regional and regional training institutions, ESAMI is the only African institution that deals with high-level training in transport. All ESAMI transportation courses and those of other divisions are designed to benefit middle and senior management, administration and technical staff both in the public and private sectors of transport.

Annex III of the report shows a sample of ESAMI courses in the field of transport which were held in 1984 and 1985. The need to have more ESAMI type training institutions in transport is already recognized at a regional level. Because of this recognition the Conference of African Ministers of Transport, Communications and Planning which was held in Harare, Zimbabwe from 10 to 11 March 1986 passed a resolution[1/] requesting African countries and intergovernmental organizations for an early establishment of other institutions similar to ESAMI which would serve the interests of other subregions of Africa.

63. ESAMI is currently making efforts to improve on the base it has already built and is attempting, in collaboration with its sponsoring governments, to become a Transportation Studies Centre with the following specific training and consultancy objectives:

(a) To strengthen the policy, analysis, and planning capacities of African transport ministries and agencies so that they perform their tasks in a cost-effective way;

(b) To improve the performance of African public and private transport enterprises so that they provide transport services that are efficient and responsive to public needs;

(c) To achieve a better use and sound maintenance of transport infrastructure and equipment fleets in the region;

(d) to obtain high level of cost recovery and financial discipline in parastatal transport enterprises; and

(e) To collaborate with other national sub-regional and regional organizations and training institutions in improving transport conditions in Africa.

64. Sub-regional training institutions like ESAMI have a lot to be commended for and, therefore, deserve the support of international organizations and the governments they serve not only because of the type of service they offer, but also because their training programmes are well adapted to a wide spectrum of local conditions.

5.3 Overseas Institutions

65. Transportation is one of the disciplines for which there is no institution of higher learning in Africa. Those who aspire for research and graduate studies in transportation normally go overseas. At post-graduate levels overseas universities offer an invaluable avenue for African graduates who need to pursue advanced level studies in specializations such as transport economics, transport engineering, transport management etc. that may not be available at national universities. A proportion of those proceeding for post-graduate studies do so with scholarships made available under bilateral arrangements.

66. African countries should reduce their dependence on overseas training in transportation not only because of the expenses involved but mainly because overseas training cannot satisfy Africa's demand for specialized manpower in the field of transport. Training curricula and programmes at overseas universities are also not always attuned to local conditions and some of the techniques taught may not be applicable in many African countries. There is a need, therefore, for African countries to consider strengthening selected

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1/ Resolution ECA/UNTACDA/Res.86/63 of 11 March 1986.

faculties in existing universities to train students from a wide range of backgrounds in the skills required for careers in transport planning, analysis, engineering, design, management and operations. To do this requires time and money; time to train university lecturers needed to cater for intake of transportation graduates, money to expand physical facilities, to buy equipments for research and teaching aids and to meet recurrent expenses. Efforts made to this effect will be worth the cost since the personnel trained at local universities and research conducted locally will help to guide and inform decision makers as to the consequences of their transport decisions.

67. Institutions for research and advanced training in transportation can only be established at subregional or regional levels, therefore, the existing African subregional organizations such as ECOWAS, PTA, ECCAS are the appropriate bases on which to consider the establishment of an institution of higher learning in transport.

5.4. Training offered by international and intergovernmental organizations

68. There are many training opportunities in various aspects of transportation which are usually offered by international organizations especially UN organizations i.e. ILO, UNCTAD, IMO, ECA etc. The World Bank offers national, subregional and regional training in specific topics in transport through the Economic Development Institute (EDI). Transport ministries and agencies can also benefit from workshops and seminars organized by ECA-sponsored multinational institutions such as the African Development Bank (ADB), the Union of African Railways (UAR), the African Regional Centre for Technology (ARCT), the African Institute for Higher Technical Training and Research (AIHT) and the African Regional Centre for Engineering Design and Manufacturing (ARCEDEM). These institutions were all designed to foster the economic and social development of Africa and are complementary in their aims and activities. Their training programmes take into consideration the local conditions.

69. Although some training programmes offered by these institutions may be modal oriented, they should be useful to personnel engaged in general and multimodal transport. Senior and middle level personnel should be encouraged to attend high-level seminars and workshops which are arranged by international and intergovernmental organizations since they offer an excellent forum for discussing transport problems by transport specialists from government ministries and the transport agencies. African governments should, therefore, make full use of seminars and workshops organized by international and intergovernmental organizations, and also nominate suitable participants since the programmes are normally well adapted to a wide spectrum of local conditions and are in most cases sponsored.

70. In considering the training institutions in transport, a common problem with many of those that were visited is that the capabilities of a trainer are taken for granted or assumed to exist. There is an underlying concept of infinite transferability in some countries and trainers are expected to emerge from the general stream of government personnel. As it is, trained trainers are in short supply and the problem is further compounded by the inability of training institutions to attract and retain competent trainers.

## 5.5 Training methods and techniques suitable for senior and middle technical and administrative personnel in the transport sector

71. It has to be made clear that training methodologies are not universal, but should be seen in a situational perspective. There is a need for comprehensiveness as well as innovativeness, by transport training institutions, in analysing training methodologies and identifying which areas would be most appropriate in specific situations.

72. However, while deciding on a kind of methodology for training personnel engaged in general and multimodal transport, it may be useful to examine some propositions, e.g.,

(a) that there may not be a single methodology, but probably a range which would deserve consideration to support the intervention role of training;

(b) that training methodology justifies itself only to the extent to which it can stimulate and sustain learning; and

(c) that training methodologies should also stimulate change and include eventually some fundamental changes in the recipients of training[2/].

73. When looking into different methods and techniques applicable in training in transport, one should also distinguish between two major training situations - on-the-job training and off-the-job training. This survey is mostly concerned with off-the-job in-service training, but it should be stressed that on-the-job training plays a crucial role in the in-service training and the development of senior technical and administrative personnel in the transport sector. In many countries on-the-job training has succeeded in one's own job. Secondments and attachments of senior and middle technical and administrative personnel from ministries to relevant modal transport agencies would be useful as a means of providing senior transport experts with new knowledge and experience. This would enable them to develop and practise their skills in the environment that is contrasting and at the same time complementary to their work situations in government ministries.

74. Some guidance on training methods which should be most commonly used for training personnel in general and multimodal transport, including their merits and shortcomings are given in annex IV. Experience has shown that training requirements in the transport sector cannot be limited exclusively to one or two teaching methods, but on methods-mix most appropriate to the subject matter and the level of participants.

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2/ A.P.Saxena, "The Choice of Training Methodologies. Source Background Factors", in Effective Use of Training Methodologies p. 164.

## VI. THE PROPOSED STRATEGY AND CONTENT OF TRAINING IN GENERAL AND MULTIMODAL TRANSPORT

75. Training programmes in general and multimodal transport should aim at satisfying the requirements of the transport sector. Experience in African countries reveals that in most cases there is no proper connection between transport training activities or policies and the overall national transport development. Training, in many cases, is poorly organized and administered, possibly because of the lack of adequate and relevant policies. A clear problem is the lack of co-operation between training, manpower planning, and overall economic and social planning. A meaningful training policy should not only aim at encouraging training at all levels, but should also ensure that funds are earmarked for it: that competent trainers are developed and made available; that proper and relevant training is undertaken; and at the level of senior and middle technical and administrative staff, self-training is encouraged.

### 6.1 Problems of training needs' identification and determination

76. The cornerstone for selecting the criteria for curriculum design is the identification of training needs. Although there is recurrent emphasis in training literature that training needs should be carefully established as a basis for formulating sound curricula, much of the advice given consists of general prescriptions. Few methods and concise techniques are given. Whereas, for example, curricula for training senior and middle technical and administrative staff in transport should take into account relevant environmental factors, only a carefully organized training needs' analysis will help in determining the specific subject to teach and the methodology of how to teach them. During the field missions, it was discovered that the few national training institutions that exist in the field of transport in Africa have not shown great expertise in developing systematic plans for the identification of training needs. What frequently happens is that trainees are simply "fitted" into predetermined programmes since the programmes of these institutions are often conceived and organized with a mixed clientele in mind.

77. Curricula should be drawn after a careful survey and analysis of national, subregional, regional and individual training needs. Training programmes delivered in many African countries in the field of general and multimodal transport often arise from uncoordinated sources. Sometimes their origin are traceable to some ad hoc pressure to improve performance in specific fields of transport project management, policy analysis and implementation or it may simply be a decision that more training is necessary.

### 6.2. Strategy for designing curriculum for training in general and multimodal transport

78. Although it may not be possible or desirable to devise any detailed or universal guidelines, methodologies are nevertheless available for planning the content design for training curricula in general and multimodal transport. Any curricula aspiring to build the technical and administrative capability

required for development will have to be built around a core of (a) knowledge (b) skills (c) attitudes and behaviour which provide technical and administrative personnel with the necessary competence to plan, organize and manage complex public services[1/]. Hence these factors, that is, basic skills, attitudes and areas of knowledge should provide the framework and formulation for any design of curricula for training technical and administrative staff in general and multimodal transport. Below are listed the knowledge, skill, attitude/behaviour that should form the basis of the curricula for technical and administrative personnel in general and multimodal transport. However, it should be borne in mind that the inventories are only illustrative and in no way imply order of priority.

79. The knowledge component of the senior and middle technical and administrative staff in general and multimodal transport should include among other things:

(a) Knowledge of cultural, economic, social and political institutions and processes that are necessary for the development of transport at national, subregional and regional levels;

(b) Knowledge of transport organizations and organizational behaviour;

(c) Knowledge of transport policy analysis, formulation, implementation and reviews;

(d) Knowledge of transport administrative processes with particular emphasis on managerial functions, personnel and finance matters;

(e) Knowledge of transport projects policy planning and implementation;

(f) Knowledge of quantitative and non-quantitative tools and methodologies which are used in studies for the development of the transport sector; and

(g) Knowledge of the ethical and value systems within which public administrations/public managers in the transport sector must operate.

80. The skills component of training curricula for senior and middle technical and administrative managers should include:

(a) The skills of providing and exhibiting the qualities of leadership in an organizational environment;

(b) The skills of engaging in complex problem solving in transport, including the management and allocation of resources among competing transport investment interests;

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1/ This classification of system is adopted from guidelines and standards for Curricular Development for Public Administration/Public Management, prepared by Ernst A. Englebert for the International Association of Schools and Institutes of Administration (Brussels: International Institute of Administrative Sciences, 1980) 14 pp.

(c) The skills of analyzing and carrying out organization and management improvements in the transport sector; and

(d) The skills for conducting research and programme evaluation in the transport sector.

81. In addition to the knowledge and skills requirements, the curriculum to be designed should inculcate in senior transport staff attitudes and behaviour of the types listed below:

(a) Understanding of the socialization of individuals into technical and administrative systems and of the behaviour of individuals in various types of transport organizations;

(b) Understanding of behaviour modification and of individual adaptation to different organizational situations;

(c) The development of personnel characteristics and practices of behaviour for successful functioning in administrative situations; and

(d) The development of social values such as responsibility, integrity, loyalty and commitment to the public interest.

82. While the knowledge/skill-attitude-behaviour package provides the general framework of the curricula to be designed for the senior and middle technical and administrative staff in general and multimodal transport, the exercise does not end there. It needs to be elaborated and operationalized further, leading to the design of individual courses in the context of the overall framework. Below are given illustrative examples of selected functional training areas. Again there is need to be careful not to consider the examples as exhaustive. It should be possible to lengthen or shorten the list in a manner appropriate to the particular needs of the user country or subregion.

### 6.3 Fields of training areas for professional senior and middle administrative staff

83. Training for this category of personnel should be aimed at enabling them to understand the processes of general and multimodal transport systems and should, therefore, include:

- Operating aspects of transportation to enable senior technical and administrative staff to know administrative and operating rules governing the functioning of the various modes of transport;

- Technical aspects of transport especially the characteristics of the various modes of transport;

- Commercial aspects of transport with emphasis on trade procedures, transport pricing and costing, and the peculiarities of transport marketing;

- Legal aspects of transport - especially international transport conventions, including transport facilitation and documentation problems;

- Economic aspects of transport including cost-benefit analysis, and investment planning in transport including the preparation of transport tariffs and rates;

- Data aspects of transport covering transport statistics data collection, processing and utilisation for decision making.

84. Training in the above areas should normally be provided either at national or subregional levels by national, subregional, international, and intergovernmental training institutions.

## The Terms of Reference

1. Project title: Manpower and Training survey in General and Multimodal Transport

2. Background and justification

The long-term objective of African development as expressed in the Lagos Plan of Action requires of the transport as well as of other sectors, more efficient use of the continent's scarce human resources.

The provision and maintenance of transport infrastructure and the daily operation of transport services are placing an increasingly growing demand on technical, administrative and managerial capacities of Africa's people. As Africa has to cope with developments in high technology in some parts of the transport sector, training has also to be geared towards the technological development. The development of skilled and well-trained staff must therefore be increased. Thus, there is an urgent need to improve the quality of human resources at all levels throughout the sector. The development of skills of managers and technicians at all levels will, for example, reduce the high maintenance costs incurred by returning equipment to its developed country sources for maintenance, or the bringing of experts from home countries.

The United Nations, Transport and Communications Decade for Africa (UNTACDA) gives high priority to manpower development and training and emphasises that the strategy must be to include the training of administrative and technical staff in each of the subsectors of UNTACDA. The third and the fourth Conference of African Ministers of Transport, Communications and Planning held respectively in Cairo in March 1983 and in Conakry in January/February 1984 also emphasized the need for the improvement of manpower development and training in the transport sector in the region. The Round-Table Conference held in Paris, France, which brought together transport experts from both developed and developing countries also stressed that training has to be one of the priority areas for the Decade programme.

There is, therefore, a need to determine manpower developments and training needs in transport for senior and middle management, administrative, and technical staff in the transport sector. The analysis should cover both qualitative and quantitative aspects of training needs, identify the type of institutions and the appropriate curriculum for the required training.

Target group

(a) General Transport

Senior and middle level management, administrative and technical staff in ministries responsible for transport, units dealing with transport in ministries of planning, finance, trade, industry, agriculture, mining, forestry, etc. in other central administrative bodies, central statistical offices, transport co-ordination bodies/committees, inter-governmental organizations (secretariats of), government/public transport enterprises, transport divisions in government undertaking enterprises in the field of trade, industry, agriculture, mining, forestry etc.

Directors, managers, senior and middle level management, administrative and technical staff in para-statal, semi-private transport enterprises, transport divisions in enterprises of trade, industry, agriculture, mining, forestry etc. (having or not having own transport fleet).

(b) Multimodal transport

Senior and middle level management and administrative staff responsible for the general development of multimodal transport especially those charged with the responsibility for the development and implementation of transit transport documents, regulations and procedures, managers and operators of container terminals at ports and inland container depots including technical staff directly concerned with management of maintenance of handling equipments and container repair.

Senior management staff in multimodal transport agencies, and those in ministries and transport divisions of various private and public organizations involved in multimodal transport planning and operations.

3. Special considerations

The project is complementary to manpower development and training projects included in the United Nations Transport and Communications Decade for Africa and will serve as a guideline to the development of curricula in the various transport training institutes which are either to be strengthened or established during the Decade programme and after.

4. Objectives

(a) Long-term objectives

The long-term objective is to improve skills of senior and middle transport management, administrative and technical staff which in turn will contribute to the improvement of the performance of transport as a whole.

(b) Immediate objective

The immediate objective is to carry out a survey of manpower requirements and training needs and to prepare a document in which a strategy for the improvement of manpower and training in the field of transport for the whole region is spelled out. The document is to serve as a basis for the preparation of a long-term training programme for African manpower development in the field of general and multimodal transport.

5. Output and activities

(a) Output

A survey report on training needs in general and multimodal transport is to be prepared containing the following:

(i) an analysis of the current training and manpower situation in the general and multimodal transport in Africa;

(ii) an analysis of training needs in the region with recommendations on appropriate methods of satisfying the needs;

(iii) a survey of, and recommendations on the types of training to be conducted;

(iv) the determination of the level of training required and the target group to be trained.

(d) Activities

(i) prepare a detailed work programme for the survey;

(ii) prepare a qualitative description of the target group;

(iii) prepare questionnaires to be sent to countries;

(iv) familiarise themselves with studies and surveys on manpower developments and training needs in transport that are available at the ECA at both modal and sectoral levels;

(v) undertake missions to selected African countries to visit transport and other ministries, and other central administration bodies, selected transport undertakings and others as required for collection of information on target group (see description of target group pgs 1 & 2 various training and manpower development sections in transport ministries, educational institutions, selected transport agencies in the region which have specialized training institutions including inter-governmental training institutions and organizations specialized in transport and/or manpower development;

(vi) prepare present and future training needs based on data and information collected during field missions and from other sources;

(vii) prepare a final survey report (as indicated in para. 5 (a) - project output).

6. Project inputs

(a) Project inputs

| Consultants (3) | Duration | Dates |
|---|---|---|
| - Transport consultant (team leader) | 4 mm | 2mm 1984 and 2 mm 1985 |
| - Transport consultant | 4 mm | Nov. 1984 to Feb. 1985 |
| - Transport consultant | 4 mm | Nov. 1984 to Feb. 1985 |

(ii) Mission travel

The consultants will be stationed in Addis Ababa and will be expected to visit selected African countries 1984 and 1985

(b) Government inputs

(i) The governments to be visisted are to provide office space, furniture and necessary equipments, supplementary secretarial services, communications, necessary statistical data and information, arrangements for visists within their countries, and local transport;

(ii) the governments are to designate counterparts, as appropriate, from their national staff to assist the consultants

(c) ECA inputs

ECA as the executing agency of the project will designate a transport expert as project officer responsible for technical back-stopping, monitoring, and co-ordinating project activities.

ECA will also provide office space, furniture, some equipment and some secretarial services while the consultants are in Addis Ababa.

(d) Any other agency's input

The specialized agencies of the United Nations and African international and inter-governmental organizations will be called upon to provide assistance as and when required in providing information and data and have discussion of selected manpower training problems.

7. Evaluation plans

A draft report will be submitted for evaluation before the preparation of the final report

8. Envisaged follow-up

The recommendations of the project are to serve as a basis for the planning and development of training programmes for training institutions in transport in the region for senior management and administrative staff.

9. Probable data of commencement and duration of the project

The consultant should start work on 1 November 1984 for a period of six months. The preparatory activities by the team leader for the project will start in August 1984.

10. Duty station of the consultants and places where work on the project is to be undertaken

The duty station for the consultants will be Addis Ababa, but they will be expected to travel to selected countries in the region.

## Job description

(a) Transport Management Training consultant (Team leader)

He/she should have an advanced degree in economics with specialization in transport and at least five years experience in transport management training. Familiarity with transport problems in Africa and a knowledge of transport operations or planning would be an advantage. Fluency in English or French with drafting abilities and good working knowledge of the other language is required.

Under the overall direction of the Director of Transport, Communications and Tourism Division of the ECA, his/her duties will be the following:

(i) Prepare a detailed qualitative description of the target group.

(ii) Preparation of a detailed questionnaire for the assessment of manpower situation and training needs and existing training institutions in transport.

(iii) Undertaking field missions to selected countries in the African region to acquaint himself with the existing training institutions and to collect data and information on manpower situation and training needs of training institutions, their programmes and curriculum, and also to assess the level of training and trainers in the various training institutions.

(iv) Visits to various manpower development sections of relevant government ministiries and modal or sectoral inter-governmental institutions, to collect data and information on development plans in transport and the corresponding development plans in manpower and training.

(v) To prepare a draft report on manpower situation and training needs in general and multimodal transport taking into consideration the present situation and future needs of transport development in Africa.

(vi) To prepare in collaboration with his counterparts a draft report covering:

- manpower and training situation in Africa;
- manpower needs for general and multimodal transport in Africa;
- training needs for general and multimodal transport in Africa;
- the types of training required to meet the needs;
- the target group;
- the training curriculum suitable for the training needs; and
- the institutions (existing and to be established) necessary for manpower and training needs;

(b) Transport consultants (general and multimodal transport)

He/she should have an advanced degree in economics with transport as a specilization and at least five years experience in transport operations or planning. Familiarity with multimodal transport problems in Africa is desirable and a knowledge of transport management would be an advantage. Fluency in english or French with drafting abilities and good working knowledge of the other language is required.

Under the overall direction of the Director, Transport, Communications and Tourism Division of the ECA, his/her duties will be the following:

(i) preparation of a detailed questionnaire for the assessment of transport performance relating it to manpower and training requirements necessary for the improvement of skills of senior management, administrative and technical staff;

(ii) undertaking of field missions to selected countries for the collection of information on manpower development requirements, training needs and for discussions on future transport development plans with some selected government ministires, transport agenices, transport training institutions and inter-governmental and subregional institutions directly associated with transport development;

(iii) assessment of the current situation in manpower and training needs in the transport sector and determination of the levels of training required for improvement of transport performance;

(iv) preparation of a draft report on the current transport situation and how it can be improved through manpower development and training activities;

(v) preparation of a draft report on the current training situation in the transport sector, its shortcomings and how it can be improved; (see project output in project document, page 3.)

## Explanation of the mathematical model used for estimating manpower needs

This presentation is aimed at linking the transport manpower, in eight African countries, to classical indicators of economic activity; out of these relations an estimate of manpower is carried out including the countries which did not provide any information.

### 1. Elaboration of the relations

The following indicators can be used

- G.N.P.
- Import and export tonnage
- The value of imports and exports,
- F.O.B. (except for services),
- National expenditures in international transport
- The budgets or turnovers of administrations or companies

The last two indicators should be adequately correlated with the manpower to be analysed, but they are not available.

The tonnage of imports and exports is not relevant because the organization of their transportation lacks complexity.

The estimate of imports and exports is a far better indicator. The estimate of the goods is directly dependent on the conditions of their transportation. It is believed that the estimate of goods and their cost of overseas transportation present a fairly stable relation, the cost of overseas transport reaching 15 percent of the F.O.B. value of the goods.

The GNP is less significant in the transport organization, but not irrelevant because the relation between the estimate of external trade and the GNP is rather stable. Nonetheless the point is that this indicator is better known. Thus it has been decided to determine the eventual co-efficients of correlation that can be obtained when the concerned figures are brought close to the indicator.

Let's point out, however, that it will probably be the best indicator in characterizing the volume of transport activities for the study of training needs in modal transport - overseas transport included.

It seems obvious, that different models must be conceived to represent the number of senior managers on the one hand, the number

of middle-level managers and skilled staff on the other hand. The middle-level managers and skilled staff case is easier because the volume of business done by one person cannot extend to a large proportion.

Thus, a ratio will certainly be significant if it reports the estimation of F.O.B. imports and exports, excluding services and the number of persons to be ranked in this latter category.

We can say that the volume of business done by any person is more or less constant. However, a difference was established between inland countries and others, for the transport organization proves to be more complicated for the former. Consequently, 2 coefficients were established.

There is no point in relating the number of senior managers to an indicator of any transport activity. A small country with a modest external trade needs a small team to set up its transport policies. The number does not grow along with the exchange. That is why a linear correlation was tried, with regard to either the volume of external trade, or the GNP or the logarithm of these values. The relevance of the adjustment was fixed from the coefficient of correlation found in each case.

The representation of the number of senior managers proceeds as follows:

Notations

N: number of senior managers
C: estimate of external trade (in billion $)

The result of linear correlations from N to C or Log C is:

N= 10 + 2C coefficient of correlation 0,91
N= 14 + 12 Log (C) coefficient of correlation 0,91

The correlations are qualitatively similar, which is acceptable. The first formula, which is simpler has been selected.

The correlation can be improved by introducing a second variable, the GNP per capita, as an indicator of the stage of growth which gives:

N= 6,17 + 0,88 GNP/P. cap. + 1,56 CE
N= estimated number of senior managers
C= estimate of external trade in billion $
GNP/p.cap.= GNP per capita in $

The coefficient of correlation is excellent it comes to 0,96

Tables 1 and 2 sum up these results.

Table 1

Col. 1 Actual number of managers
Col. 2 GNP
Col. 3 GNP/p.cap
Col. 4 C= estimate of external trade
Col. 5 Log (C)
Col. 6 Estimate of N obtained by the first formula
Col 7 N

Table 2

Col. 1 Actual number of managers
Col. 2 GNP/p capita
Col. 3 C=estimate of external trade
Col. 4 Estimate of N
Col. 5 N

Table 1

| COUNTRIES | Actual Number | GNP | GNP/ p.cap. | Estim. ext.trade | LOG C | Estim. of N | N |
|---|---|---|---|---|---|---|---|
| Morocco | 25 | 18.00 | 870 | 6.12 | 0.79 | 21.90 | 3.10 |
| Egypt | 30 | 30.00 | 680 | 11.91 | 1.08 | 33.48 | -3.48 |
| C.A.R. | 10 | 0.75 | 330 | 0.31 | -0.51 | 10.28 | -0.28 |
| Burundi | 7 | 1.10 | 250 | 0.22 | -0.66 | 10.10 | -3.10 |
| Cote d'Ivoire | 25 | 10.50 | 12.00 | 4.25 | 0.63 | 18.16 | 6.84 |
| Zimbabwe | 15 | 7.00 | 850 | 2.96 | 0.47 | 15.58 | 0.58 |
| Tanzania | 10 | 5.00 | 270 | 1.58 | 0.20 | 12.82 | -2.82 |
| Ethiopia | 12 | 4.50 | 140 | 1.00 | 0.00 | 11.66 | 0.34 |

CORRELATION (1,2): N + 9.12 + 0.79 *GNP R + 0.91

CORRELATION (1,4): N = 9.66 + 2.00 ET R + 0.91

Table 2

| COUNTRIES | Actual number | GNP/ p.cap. | Estim.of ext.trade | Estim.of N | /N |
|---|---|---|---|---|---|
| Morocco | 25 | 870 | 6.12 | 23.4 | 1.62 |
| Egypt | 30 | 680 | 11.91 | 30.7 | -0.76 |
| C.A.R | 10 | 330 | 0.31 | 9.6 | 0.45 |
| Burundi | 7 | 250 | 0.22 | 8.7 | -1.71 |
| Cote d'Ivoire | 25 | 1200 | 4.25 | 23.4 | 1.64 |
| Zimbabwe | 15 | 850 | 2.96 | 18.2 | -3.27 |
| Tanzania | 10 | 270 | 1.58 | 11.0 | -1.01 |
| Ethiopia | 12 | 140 | 1.00 | 9.0 | 3.04 |

CORRELATION (1,6): N=6.00 + 2.00 * ET + 0.006 *GNP/p.cap. R=0.96

The representation of the number of middle level managers and skilled staff proceeds as follows:

Statistics about two inland countries and two others are available. The figures of external trade have been taken into account.

Inland countries

C.A.R. N= 230 C= 0.31 milliard $ C/N= 1.4 million$

Burundi N=170 C= 0,22 milliard $ C/N= 1.3 million $

These figures stand very close to each other. We have kept 1.4 million per employee for the economy of Central Africa Republic (C.A.R.) is probably closer to that of the other inland countries.

Coastal countries

MOROCCO N= 1.590 C=6.12 milliard $ C/N= 3.8 million $
IVORY COAST N=900 C=4.25 milliard $ C/N= 4.7 million$

We have kept the average value of 4.3 million dollar per employee. An intermediate value has been selected for semi-inland countries or others which have a higher level of activity than the countries under study. For these countries the formula cannot be adaptable without any corrections.

Samples of ESAMI Transport courses held in 1984 and 1985

1. Planning and analysis of transport investments

Objectives:

To improve decisions relating to the design, size and timing of investment projects in roads and road transport, railways, ports and aviation so that resources available in the transport sector are used efficiently and effectively.

Content:

The course provides the necessary theoretical foundations and practice in the use of analytical skills needed for sound transport project preparation, evaluation and implementation. Topics covered include cost-benefit and financial analysis; transport policy and economic factors affecting the choice of transport investment projects (including those for maintenance); preparation of terms of reference for feasibility studies; the selection of consultants and evaluation of their reports.

Participants:

Senior administrators, engineers, economists, planners and other analysts involved in preparing, appraising and deciding upon transport projects, including their financing. Such officials are likely to be in major transport agenices such as national railways, highways, road transport, port or aviation authorities or in Ministires of Finance, Economic Planning and Transport.

Duration:

Four weeks - given annually.

2. Road maintenance programme planning budgeting and management

Objectives:

To help governments protect and preserve the heavy investment which many have made in their road systems over recent years. This is of particular priority in the light of the rapid deterioration taking place in the networks of some countries, the rising vehicle operation costs associated with poor maintenance and the likely future scarcity of resources for new road investment.

Content:

The course reviews the broad principles and practices of maintenance management, including the scheduling and budgeting of

physical and human resources. Alternative maintenance arrangements are considered as are ways of equipment and materials management. The economics of road maintenance and taxation/financing are also dealt with.

Participants:

Senior level officers responsible for the planning and execution of road and street maintenance. Such officials may be in Ministriesd of Works, Transport and Planning or in municipal governments. The course is also appropriate for selected officials in the construction industry, universities and transport training institutions.

Duration:

Four weeks - given annually.

3. Rural transport investment planning and services improvement

Objectives:

There is a great need in most African countries to extend the reach of transport infrastructure and range of services provided in the rural areas where the majority of the continent's 450 million people live. The objective of this course, therefore, is to examine the ways and provide practical analytical approaches whereby the significant improvements needed in improving efficiency and effectiveness in rural transport can be realized.

Content:

The course covers the planning of rural transport infrastructure, particularly roads and lower level infrastrucutre such as paths, trails and tracks, including appropriate design standards, methods of construction and ways of financing as well as maintenance. Particular attention is given to the artificial constraints that are often placed by laws or government policies on improving services in the rural areas. The role and application of various means of travel and transport both modern and traditional, are explored and discussed. The roles for participation by local communities and other informal organisations are also examined.

Participants:

Engineers and planners in Ministries of Works, Transport, Agricultural and/or Planning; Rural Development Offices; and teachers in national training institutions.

Duration

Four weeks - given annually.

4. Trade Facilitation and documnetation improvement

Objectives: International and inter-regional trade expansion in many parts of the ESAMI service region are hampered by cumbersome and costly documentation and other approval procedures. The purpose of this course is to help governments increase the flow of trade by examining the inefficiencies involved by many procedures and practices and seeking more effective recording and control mechanisms.

Content:

Examination of existing procedures and documents; evaluation of their impact; review of experiences elsewhere and the efforts of the Economic Commission for Africa, UNCTAD, ICAO and other agencies to facilitate trade in the region.

Participants:

Senior managers in Ministries of Transport, Commerce and Trade, Agriculture, Industry, Central Banks, Customs and Excise Authorities as well as those in freight forwarding organisations.

Duration:

Four weeks - given annually.

5. Design and management of road safety programs

Objectives:

To assist governments in their effort to contain or reduce the heavy social and personal costs caused by the increasing number of road accidents.

Content:

The course covers the steps involved in designing and implementing a road safety improvement plan. Thus it starts from determining road safety policy and the setting of programme goals and objectives; organisational arrangements and responsibilities are considered; road accident causes and consequence analysis and a wide variety of cost-effective accident reduction measures are examined; finally, the data and methods needed to review, evaluate and monitor plan performance and effectiveness are reviewed.

Participants:

Appropriate senior officials from Ministries of transport, Health, Education, Information, Police and Planning as well as representatives of voluntary organisations and transport training institutions concerned with road safety.

Duration:

Two weeks.

6. Transport statistical and management information systems

Objectives:

To improve the quality of transport policy formulation, transport planning and project analysis as well as the management of transport operations by providing more appropriate and timely data and other information relating to transport sector operations.

Content:

Statistical and other data/information requirements; methods of collection, analysis and presentation (including reporting procedures). The course will cover inventory data, operational information about costs and performance, traffic patters and volumes, etc., as well as internal management information needs for enterprise planning, performance monitoring and evaluation.

Participants:

Middle and senior level officials in Ministries of Transport, Planning and Finance and in Central Statistical Bureaux of Departments, including Central Banks, as well as staff of large modal transport enterprises and agencies such as railways and airline corporations and port and highway planning authorities.

Duration:

Four weeks - given in 1985 and biennially thereafter.

7. Advanced transport economics

Objective:

To impart to participants a comprehensive knowledge of transport economics principles which they can apply in the improvement of transport development management within their organizations.

CONTENTS

- Transport and the economy including: nature and functions of transport; production of transportation; scope of transport economics; economies of scale in transport, competition - monopoly in transport; organization of transport.

- Theory of pricing, including: characteristics and classification of markets; pricing for different market structures, costs and pricing process.

- Theory of pricing in transport, including: theory of railway rate making; pricing on the base of costs; theory of motor carrier rates; general level of rates; rate making in practice.

- Transport as a national/regional problem, including: general objectives of public policy; changing nature of transport problems; public investments and public aid.

- Competition and co-ordination of transport, including: economic and technical characteristics of different transport modes; coordination of transport services.

- Financing transport, including: allocation of economic resources; financing railways; financing motor transport.

- Regulation and administration in transport policy.

Participants:

Senior transport policy makers, senior planning officers and middle managers involved in decision - making in transport development and improvement, coordination of transport, services, and those concerned with costing and rate making in transport.

Duration

Four weeks.

Existing methodologies suitable for training in general and multimodal transport

1. Conferences

Characteristics: Can assume many different forms; the terms often used in association with conferences; they have no uniform accepted meaning; usually they consist of a series of commitees, discussion groups combined with plenary sessions in which the different subgroups come together to report and discuss their respective findings; most useful as tools for promoting exchange of ideas and interaction between the senior administrators and managers themselves and between practioners and scholars of public administration; may be organized to discuss specific administrative technical managerial problems which call for concerted collective thinking for their solution, and/or may form part of an executive development programme for senior administrators and managers, they are not of much help in deepening knowledge and learning new techniques; require a capable leader, often designated as moderator or chairman; to be of value group discussions require three ingredients: an agenda, a skilled leader, and contributing participants; if any of these is lacking, a discussion is apt to lapse into conversation.

Usefulness for developing countries: Group discussions have been found particularly effective in attracting senior administrators in developing countries and thereby introducing them to and involving them in training programmes; gatherings provide an opportunity to establish contacts with counterpart professionals and eminent scholars and for exchange of ideas; useful as an approach to get participants to discuss common local or regional problems and approaches without interference of foreign concepts and opinions.

Limitations: There is a growing feeling in developing countries that seminars and round tables are not of much help in deepening knowledge and learning new techniques; they can easily degenerate into superficial, unfocused, drifting conversation in which most vocal participants can easily dominate; this is particularly the case where participants are from different social classes and different levels in the official hierarchy; working papers are not always prepared and seldom circulated in time for promoting fruitful discussion; there is also difficulty in finding conference leaders competent enough to lead and guide discussions in a meaningful way and at the same time encourage every participant to contribute his best.

Applicability in transportation training: limited depending on the number of participants.

2. Lectures and guest speakers' talks

Characteristics: The most widely used method; useful for rapid communication of complex information; very good for introducing new material and summarizing; assumes participants have the capacity intellectually and emotionally to absorb the instruction; least expensive and time consuming device; participants have only a passive role to play, enrichment possible by using audio-visual and other teaching aids.

Usefulness for developing countries: Easiest kind of programme to develop; among least expensive in terms of instructor and trainee; useful for giving senior practising managers information about new techniques; provides an opportunity for trainees to meet and listen to most high ranking administrators and executives from the Government, political and public figures, and occasionally university professors of special distinction; with small groups (10-20 participants) it is obviously possible for some degree of dialogue to evolve, for questions to be raised and answered, and for group discussion to develop.

Limitations: Encourages passive reception rather than doing (this is supported by the absence of feedback on quality of reception); calls for highly qualified instructors who are capable teachers and as well, knowledgeable and experienced in management at a senior level in a developing country; tends to be too narrowly focused to help in learning how to solve complex problems; the attention span of the recipients is likely to be limited to 15-20 minutes of continuous monologue; discourages active involvement by the participants, either with the speaker, or amongst themselves, and thus reduces the chances of any significant learning occurring.

Applicability in transportation training: very good especially in managerial and technical oriented transport courses.

3. Syndicate

Characteristics: A combination of lectures and group porjects; the group projects are assigned to small groups of participants (mostly of 3 to 10 members), called syndicates, working all on the same topic or each on different topics under usually elected chairmen on subjects that follow from and are supported by the lectures; the chairman conducts the discussions and leads his syndicate in its work and in the preparation of the report; the report is then discussed in an open forum with all other syndicates being present; the syndicate studies promote better comprehension of the substance of lectures through discussions and exercises; they also develop co-operative thinking, duplicate the real life situation of a management team; develop ability of self-expression; provided practice in handling new techniques and procedures, increase ability for decision-making, imply working under severe time limitations; permit interpersonal and intergroup comparisons; for the method to succeed, the task assigned must be relevant and the members of a syndicate must have sufficient experience to handle the task.

Usefulness for developing countries: The method promotes group thinking, sensitivity to different points of view and to the solution of problems; it helps explode blind faith in the wisdom of authority and promotes emotional integration among responsible persons drawn from various parts of the country or field of activities; the method gives the participant concentrated practice in handling techniques and procedures which a senior executive has to use in his day-to-day work; the trainee develops a better understanding of people around

him and acquires greater ability to utilize other people's efforts and ideas; completeness of programme may make it feasible for use in its entirely by simply changing the nature of the substantive content to meet local conditions; the method encourages experimentation with new ideas and concepts; close collaboration may develop among trainers, organisations and participants; the solutions reached during discussion, which are usually in the form of approaches, are more adapted to the economic and social conditions of the country and hence more meaningful; moreover, trainees achieve deeper insight into the subject matter and the trainer is provided with instant feedback.

Limitations: The method requires very careful planning, scheduling as well as an introductory lecture or preliminary reading by participants; adequate background material should be prepared well in advance of sessions; comparatively large staff of instructors with relevant experience and facilitator skills is necessary; training staff should be prepared to introduce a diversity of relevant materials in order to enrich syndicate activity and sustain the interest of members; it is often difficult to create participative climate due to psychological factors such as shyness, resentment at being put "on the spot", ignorance which one is reluctant to admit and to sociological factors such as rank consciousness, reliance to over-depending on authority, etc.; the necessity to create participative climate requires first a certain personal contact among the participants and many interventions and encouragement by the trainer to disrupt these barriers; close collaboration which is required may be difficult to achieve for the professional level of all participants should be more or less the same so as to ensure a homogenous discussion and understanding; effective as a training method only where the participants are able to contribute to the discussion something from their personal experience; also very important to obtain a good degree of homogeneity among the syndicates; the subject matter, indicating the key points to discuss, will be of great help that concern.

Applicability in transportation training: Very good especially in courses where participants are from various modes of transport with various professional backgrounds.

4. Case study

Characteristics: Involves a discussion by the group of a written account of an actual event which poses a number of questions or illustrates certain issues of current interest to the trainees; depends on group discussions and group analysis, as well as individual study and analysis of an unfolding managerial situation; emphasis is more on analysing a situation from various perspectives in order to show that there may be more than one possible decision for any situation; this action-oriented curriculum is especially effective in developing analytical thinking in a competitive milieu; method calls for high-level instructor skill to get forward movement with little direct

intervention and to guide analysis of the process to reinforce experience; the technique forces participants to stop expecting an answer, much less the right answer, from the instructor; it forces them to ask questions instead and to learn to seek the right questions; there is a need for indigenous diagnostic training material; the level of material selected should produce a reasonable challenge to each participant.

Usefulness for developing countries: Because the instructor does not possess an authority role, because the right question is more important than the right answer, this method of teaching has proved quite valuable in developing countries by forcing the participants to shed the "authority-subject" relationship that is so characteristic in many national settings; thus the method could help to promote changes in traditional attitudes which are of such vital importance to the proper functioning of senior managerial and administrative stratum; indigenous case studies could provide "chunks of reality" which help promote meaningful debate based on what is rather than on what should be; the case study can be a very stimulating and practical method of teaching that helps to develop administrtive skills as well as providing knowledge.

Limitations: Foreign cases are not generally usable; studies made in one country or type of organisation may have little meaning to trainees accustomed to totally different situations; preparation of local case studies requires substantial time, funds and skilled human resources, because poor case material is useless; instructors should possess or acquire a sound grasp of relevant knowledge areas in order to produce a realistic situation and relate it to the extent possible in the fields of the trainees; instructors using case studies should have opportunity for training in the acquisition of essential skills; if natural or cultural style is conducive to "wandering" in discussion the case method might have less value unless a trainer keeps working until this very point sifts in: that there is no correct answer - there may be several; if lack of sufficient involvement is due to language problems, especially of technical terms, a provisional glossary of terms may be issued.

Applicability in transportation training: Very good and useful especially if the cases used are based on transport problems of developing countries.

5. Simulation and management games

Characteristics: They represent a further step towards relating theory to practice by creating in the training situation the type of conditions that exist in the actual work environment; simulated conditions can never be precisely the same as those found on the job but with a lot of effort they can be made remarkably realistic, the participants are given roles to play, tasks to perform, and problems

to solve, the method requires an intensive search for the factors underlying the surface situation, an analysis of those factors, the making and implementing of decisions, and further analysis and decisions as the results of the first are made known; the participants are split into competing groups, as each group acts out its imaginary situation, it makes decisions based on information fed to it as the action develops; when each group has completed its game, the results are compared and one group is seen to have done better than the others; after the game is finished, there is an evaluation session when the game is re-run with all the information available to all players, as well as their actions, competitors' reactions; this critique of their decisions is considered by many to be a most valuable part of the game for participants; the higher the executive level of participants, the less structuring games be; adequate time should be allowed for analysis and discussion.

Usefulness for developing countries: The method provides a very flexible approach which can be based on simulation of almost any managerial process or situation or any managerial decision-making circumstance; appeals to the "gaming instinct" and consequently great interest can be aroused; the games point up the value of long-range planning and of the "corporate team", interpersonal relations, which can become volatile during a game, can also be included in the critique session, thus adding qualitative as well as quantitative factors; the learning experience provided through games has often been a durable and active one, it is particularly effective where there is a readiness to examine behaviour openly in the group; the games are also normally more acceptable to the senior public officers who may feel that they are above the need for training; they are more effective in developing skills and influencing attitudes than the lecture; this method is the most revealing way to highlight shortcomings and weaknesses of participant management thinking because of the "doing" properties of the games as well as its competitive atmosphere.

Limitations: Few games can be imported without considerable change as they tend to assume national value systems and specific socio-cultural norms; rather expensive and time consuming to develop and try out to eliminate counter-productive effects; where the "gaming instinct" is extremely high the focus may be on the game rather than the learning; where gaming is not accepted culturally, participants may become too concerned with competitive aspects; games usually require a fairly considerable amount of time, both in preparation and execution, as well as flexible room arrangements (e.g., for competing teams to withdraw to); extremely c. lex games can be devised which require treatment and analysis of quantitative data (e.g., financial, demograhic, text scores) and access to data processing facilities; at a senior management level this method requires considerable skill, detailed preparation, and probably the use of expensive equipment.

Applicability in transportation training: Fair in technical oriented training but very good for administrative and managerial courses.

6. Field vists

Characteristics: Field visits and work on selected projects are useful training tools for senior administrators and managers; they are usually a part of a "sandwich" training beginning with an instruction period, followed by application and concluding with an evaluation and follow-up period; through field visits the participants receive instruction by observation of on-going operations, questioning other practising managers, effective for evoking interest in management approaches and processes of others; project method is a leading technique, based on "learning by doing" principle; trainee may act as a managing consultant; when properly organised the method includes the risks, interactions, emotional involvement, stress, and intellectual challenge of consulting work; at the end of the assignment trainees in most cases have to present a written or oral report in a plenary follow-up evaluation session; reports, accompanied by written evaluations and recommendations regarding further development could be forwarded to the interested organisations for consequent actions or could serve as case studies.

Usefulness for developing countries: Field visits within the country tend to increase the rate of diffusion of usable procedures and techniques, encourage the interest of the senior manager in other possibilities; the project method, in addition to training on basis of background and need, provides a complete, meaningful experience for the participant, does not require local adaptation as training is mostly carried out in local organisations; field visits can add to the variety, interest, and balance of a training programme; it provides an opportunity for the trainees to get a break from the classroom and their own work, to relate the theory taught on their course to what happens in practice, and to hear a variety of opinions from the people they meet in the field; it may provide the only effective means of studying a particular problem because it is essential to meet people who could not all be brought to the training establishment, e.g., many specialists working in rural development projects.

Limitations: The cost of field visits may be great and the return, if any, may be in interest rather than knowledge or skill; they require careful planning, knowledgeable selection of organisations to visit, and searching analysis and discussion before and after the visit to relate the problems and approaches of the organisation visited and the home organisation; project method could be an expensive approach as well which calls for very knowledgeable and skilled managers and consultants; it calls for considerable participant's time, consultation support, evaluation and feedback.

Applicability in transportation training: Very good for all types of training especially transportation project, management, maintenance and operations courses.

List of countries visited and persons met during field missions

**EGYPT**

| | |
|---|---|
| Dr. M.A.El Hawary | Professeur a l'Universite du Caire<br>Conseiller Technique au Ministere des Transports<br>Director, Development Research and Technological Planning Centre<br><br>Cairo University<br>P.O.Box 38 Giza |
| Mr. Hamed Mobarak | Cairo Consulting Group - Cairo Governorate<br>Abdine Square<br>Cairo A.R.E. |
| Dr. A.K.F.Lashine | Vice-Chairman, Transport Planning Authority<br>Ministry of Transport - Kasr El Einy St. Cairo |
| Mr. Frank Hartvelt | Deputy Resident Representative-UNDP<br>29 Sh. Dr. Taha Hussein Zamalek<br>P.O.Box 982 Cairo |
| Dr. Shaker Kamel | Technical Director of Transport Planning Authority - Ministry of Transport<br>105 Kasr El Einy Street - Cairo |
| Ing. Abdel Rahman Bouseila | Under Secretary of State - Ministry of Civil Aviation - Cairo Airport - Cairo |
| Eng. Maher Fayez | General Director, Road Bridge Authority<br>Ministry of Transport<br>Kasr El Einy Street |
| Mr. El Rachid El Toughi | Vice Chairman, Road Bridge Authority<br>Ministry of Transport<br>Kasr El Einy Street |
| Mr. Cornu | Conseiller Technique au Ministere du Developpement<br>Responsable du project "Schema Directeur du Grand Caire" |

**ETHIOPIA**

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|---|---|
| Mr. Amare | Director of Planning and Projects Department<br>Ministry of Transport and Communications |
| | Head of Manpower Planning Department<br>Office of National Committee of Central Planning<br>Organisme place sons la Presidence du Chef de l'Etat |
| Mr. Abera Wolde Sadik | Head of Construction Planning Department<br>Ministry of Construction (2)<br>Assure la tutelle de l'Ethiopian Roads Construction Authority |

C.E.A.

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|---|---|
| Mr. Tchouta Moussa | Secretaire Executif Adjoint |
| Ms. Kacperska | Chief of Transport Division |
| Mr. P. Were | Multimodal Transport |
| Mr. Farabet | Railways Transport |
| Mr. J. Solis | Railways Transport |

**MAROC**

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|---|---|
| Mr.Dierckx de Castele | Representant resident adjoint<br>PNUD<br>Angle Avenue Moulay Hassan, rue Assafi |
| Chacra | |
| Badry | |
| Ms. Sentuc | |
| Ms. Ottamani Hamza | Ministere des Transports<br>Directeur de la Planification et de la coordination des Transports |
| Mr. Haddaoui Bouchaid | Directeur de la Formation Professionnelle<br>Tel: 7/737 60 |
| | Ministere des Peches Maritimes et de la Marine Marchande<br>10 rue Chellal Ouzoud Bad Marrakech-Agdal-Rabat |
| Ms. Lahlou Abd El Kader | Directeur des Relations Internationales et de la Formation |
| Ms. Rafiky Abd El Kader | Chef de la Division de la Formation |
| Ms. Sabai Larbi | chef de la Division des Affaires Juridiques |
| Ms. Taleb Abd El Aziz | Charge d'Etudes |
| | Ministere de l'Equipement et de la Formation Professionnelle |

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|---|---|
| Ms. Meziane | Secretaire general |
| Ms. Halab | Directeur des Affaires du Personnel et de la Formation |
| Ms. Layachi | Directeur des Ports |
| Ms. Lamrini | Directeur-Adjoint des Ports |

**REPUBLIQUE CENTRAFRICAINE**

**PNUD**

| | |
|---|---|
| Mr. Bouillette | Expert affecte a la Direction des Transports et du Tourisme |

Haut-Commissariat au Plan Charge de la Cooperation economique et financiere

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|---|---|
| Mr. Zemingui | Expert charge des infrastructures et du secteur des transports |
| Mr. Bango | Expert charge des ressources humaines |

Ministere des Transports

| | |
|---|---|
| Mr. Yannou | Secretaire General |
| Mr. Rattin | Chef de Cabinet |
| Mr. Lachene | Expert affecte a la Direction des Etudes de la Documentation et de la Planification |

Direction Generale de l'Aviation Civile

| | |
|---|---|
| Mr. Dzibrine | Directeur de la Meteorelogie remplacant le Directeur General en mission |
| Mr. Guekol | Directeur de l'Aviation Civile |
| Mr. Komesse | Chef du Service du Controle Technique et de la Formation |

Direction Generale des Transports de Surface

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|---|---|
| Mr. Gony-Fara | Directeur de la circulation |

Chambre de Commerce

| | |
|---|---|
| Mr. Malendoma | President |

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| | Conseil Centrafricain des Chargeurs |
| Mr. Dondra | Directeur du C.C.A.C. |
| | Bureau d'Affretement Routier Centrafricaine |
| Mr. Gentil | Directeur |
| | Entreprises de transport et de transit |
| Ms. Gaza | Directeur du L.C.A. |
| Toussaint | Directeur de S.O.C.A.T.R.A.F. |
| Brulon | Directeur de PONTECO |
| Beaucamp-Fuseau | Directeur de MORY S.A. |
| Dorange | Directeur de la S.N.C.D.V. |
| | Institut de Gestion des Entreprises |
| Mr. Crepon | Assistant |
| Mr. Pecle | Assistant |
| | O.N.I.F.O.P. |
| Mr. Aboukhar Salem | Directeur General |
| | **TANZANIA** |
| Mr. Muskira | Charge de mission |
| | Ministry of Communications and Works |
| Mr. Twebangira | Director of Manpower and Administration Development Manpower and Training |
| Mr. Lugimbara | |
| | ESAMI |
| Mr. Njuguna | Head of Transport Department |
| | **ZIMBABWE** |
| | **UNDP** |
| Mr. K. Stigen | Charge de mission |
| | Ministere des Transports |
| Mr. Mugabe | Head of Division of Overall Affairs |
| Mr. Lundin | head of Transport Branch |
| Mr. Clark-Farr | Head of Railways Division |
| Mr. Chimenbiri | Chief Officer<br>Director of Training Centre |

Bureau d'etudes suedois charge de la national Transport Study (SWECO)

| | |
|---|---|
| Mr. Hanson | Project Manager |
| Mr. Kerridge | Economist |

Chartered Institute of Transport

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| Mr. Cruttenden | Chairman<br>Managing Director Entreprise de transport (SWIFT) |
| Mr. Steyn | SWIFT Personnel and Training |

## List of acronyms

| | |
|---|---|
| AIHT | African Institute for Higher Technical Training and Research |
| ARCEDEM | African Regional Centre for Engineering Design and Manufacture |
| ARCT | African Regional Centre for Technology |
| ECA | Economic Commission for Africa |
| ECCAS | Economic Community for Central African States |
| ECOSOC | Economic and Social Council |
| ECOWAS | Economic Community for West African States |
| EDI | Economic Development Institute of the World Bank |
| ESAMI | Eastern and Southern African Management Institute |
| ICEM | Intergovernmental Committee in European Migration |
| PTA | Preferential Trade Area of Eastern and Southern Africa |
| SADCC | Southern African Development Coordination Conference |
| UNCTAD | United Nations Conference on Trade and Development |
| UNDP | United Nations Development Programme |
| UNTACDA | United Nations Transport and Communications Decade for Africa |

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